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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,583	02/06/2004	Yong-Jun Lim	Q79521	2339

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EXAMINER	
PATEL, JAY P	
ART UNIT	PAPER NUMBER
2419	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,583	LIM ET AL.	
	Examiner	Art Unit	
	JAY P. PATEL	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,8-10,12,14,18 and 19* is/are rejected.

7)☒ Claim(s) *4,7,11,13 and 15-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 8 and 18 rejected under 35 U.S.C. 102(e) as being anticipated by Osafune et al. (US Publication 20020023150 A1).

2. In regards to claim 1, Osfune shows in figure 4 (the network arrangement is illustrated in figure 1) a server computer apparatus for transferring packets in an IP network. When a packet arrives with destination address IP_C1, the server searches routing table 401. The server finds that the next hop IP address mapped to the network address IP_C corresponding to the IP address IP_C1 (detecting from the unified cache an entry storing a network layer address that matches a network layer address of the destination node is determined as onlink), that is, the IP address of the next network node to which the packet is to forwarded is IP_Ar, (determining whether a destination node is onlink or offlink based on a unified cache storing information regarding a plurality of nodes linked to a predetermined network. Since the packet is forwarded to router 129, a determination is made as to where to forward the packet i.e. whether the destination is onlink or offlink) and the output port is NIF 102 (see paragraph 55, page 4).

Next, the server 101 searches the ARP cache 402 and fids that the MAC address mapped to the IP_Ar is MAC_Ar (determining a link layer address in the entry detected in step b as the link layer address of a next hop node) (see paragraph 55, page 4).

3. In regards to claim 8, Osfune shows in figure 4 (the network arrangement is illustrated in figure 1) a server computer apparatus for transferring packets in an IP network. When a packet arrives with destination address IP_C1, the server searches routing table 401. The server finds that the next hop IP address mapped to the network address IP_C corresponding to the IP address IP_C1 (detecting from the unified cache an entry storing a network layer address that matches a network layer address of the destination node is determined as onlink), that is, the IP address of the next network node to which the packet is to forwarded is IP_Ar, (determining whether a destination node is onlink or offlink based on a unified cache storing information regarding a plurality of nodes linked to a predetermined network. Since the packet is forwarded to router 129, a determination is made as to where to forward the packet i.e. whether the destination is onlink or offlink) and the output port is NIF 102 (see paragraph 55, page 4).

Next, the server 101 searches the ARP cache 402 and fids that the MAC address mapped to the IP_Ar is MAC_Ar (determining a link layer address in the entry detected in step b as the link layer address of a next hop node) (see paragraph 55, page 4).

4. In regards to claim 18, Osfune shows in figure 4 (the network arrangement is illustrated in figure 1) a server computer apparatus for transferring packets in an IP network. When a packet arrives with destination address IP_C1, the server searches

routing table 401. The server finds that the next hop IP address mapped to the network address IP_C corresponding to the IP address IP_C1 (detecting from the unified cache an entry storing a network layer address that matches a network layer address of the destination node is determined as onlink), that is, the IP address of the next network node to which the packet is to forwarded is IP_Ar, (determining whether a destination node is onlink or offlink based on a unified cache storing information regarding a plurality of nodes linked to a predetermined network. Since the packet is forwarded to router 129, a determination is made as to where to forward the packet i.e. whether the destination is onlink or offlink) and the output port is NIF 102 (see paragraph 55, page 4).

Next, the server 101 searches the ARP cache 402 and fids that the MAC address mapped to the IP_Ar is MAC_Ar (determining a link layer address in the entry detected in step b as the link layer address of a next hop node) (see paragraph 55, page 4).

In regards to claim 6, the server 101 searches the ARP cache 402 and finds that the MAC address mapped to the IP_Ar is MAC_Ar (see paragraph 55, page 4).

In regards to claim 12, the server 101 searches the ARP cache 402 and finds that the MAC address mapped to the IP_Ar is MAC_Ar (see paragraph 55, page 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osafune et al. (US Publication 20020023150 A1) in view of Sharma (US Publication 20040001497 A1) further in view of Matsumoto (JP 02001119399A).

In regards to claim 2, Osafune teaches all the limitations of parent claim 1. Osafune further teaches, a routing table 401 and an ARP cache 402 (destination cache).

However, Osafune fails to each, the cache further comprising, a neighbor cache, a router list and a prefix list. Sharma however, shows in figures 6, 8 and 9, routing methods using a prefix tree where the next hop, local interface, next hop link and next routes are respectively identified (neighbor cache, router cache, and prefix cache) by indexing a single table.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prefix tree matching method taught by Sharma into the routing method taught by Osafune. The motivation to do would be to make routing decisions based on interface information from a neighboring node (see paragraph 7 on page 1 in Sharma).

In further regards to claim 2, Sharma and Osafune fail to teach, using a unified cache in an IPv6 environment. Matsumoto however, teaches the above-mentioned deficiency. Matsumoto teaches that an extracted MAC address from an IPv6 header can be stored in an ARP cache (see the solution section of the translated abstract on page 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an extracted MAC address in an IPv6 ARP cache as taught by Matsumoto with the teachings of Sharma and Osafune. The motivation to do so would be to allow for traffic reduction in an IP network version 6 by extracting a layer 2 address in addition to the IP address for routing purposes.

In regards to claim 9, Osafune teaches all the limitations of parent claim 8. Osafune further teaches, a routing table 401 and an ARP cache 402 (destination cache).

However, Osafune fails to each, the cache further comprising, a neighbor cache, a router list and a prefix list. Sharma however, shows in figures 6, 8 and 9, routing methods using a prefix tree where the next hop, local interface, next hop link and next routes are respectively identified (neighbor cache, router cache, and prefix cache) by indexing a single table.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prefix tree matching method taught by Sharma into the routing method taught by Osafune. The motivation to do would be to make routing decisions based on interface information from a neighboring node (see paragraph 7 on page 1 in Sharma).

In further regards to claim 9, Sharma and Osafune fail to teach, using a unified cache in an IPv6 environment. Matsumoto however, teaches the above-mentioned deficiency. Matsumoto teaches that an extracted MAC address from an IPv6 header

can be stored in an ARP cache (see the solution section of the translated abstract on page 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an extracted MAC address in an IPv6 ARP cache as taught by Matsumoto with the teachings of Sharma and Osafune. The motivation to do so would be to allow for traffic reduction in an IP network version 6 by extracting a layer 2 address in addition to the IP address for routing purposes.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osafune et al. (US Publication 20020023150 A1) in view of Sharma (US Publication 20040001497 A1).

In regards to claim 3, Osafune teaches all the limitations of parent claim 1. Osafune further teaches, the packet being forwarded to router 129 (detecting from the unified cache an entry storing information regarding a router among the nodes) (see paragraph 55, page 4).

However, Osafune fails to teach prefix matching for a network layer address. Sharma however, shows in figures 6, 8 and 9, routing methods using a prefix tree where the next hop, local interface, next hop link and next routes are respectively identified by indexing a single table. In figure 6, test bit Z has two branches one for offlink and one for onlink.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prefix tree matching method taught by

Sharma into the routing method taught by Osafune. The motivation to do would be to make routing decisions based on interface information from a neighboring node (see paragraph 7 on page 1 in Sharma).

In regards to claim 10, Osafune teaches all the limitations of parent claim 8. Osafune further teaches, the packet being forwarded to router 129 (detecting from the unified cache an entry storing information regarding a router among the nodes) (see paragraph 55, page 4).

However, Osafune fails to teach prefix matching for a network layer address. Sharma however, shows in figures 6, 8 and 9, routing methods using a prefix tree where the next hop, local interface, next hop link and next routes are respectively identified by indexing a single table. In figure 6, test bit Z has two branches one for offlink and one for onlink.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the prefix tree matching method taught by Sharma into the routing method taught by Osafune. The motivation to do would be to make routing decisions based on interface information from a neighboring node (see paragraph 7 on page 1 in Sharma).

7. Claims 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma (US Publication 20040001497 A1) in view of Frick et al. (US Publication 20040001485) further in view of Matsumoto (JP 02001119399A).

8.

9. Claims 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma (US Publication 20040001497 A1) in view of Frick et al. (US Publication 20040001485) further in view of Matsumoto (JP 02001119399A).

10.

11. In regards to claim 14, Sharma shows in figures 6, 8 and 9, routing methods using a prefix tree where the next hop, local interface, next hop link and next routes are respectively identified (neighbor cache, router cache, prefix cache) by indexing a single table (unified cache).

In further regards to claim 14, Sharma fails to teach the cache including destination information. Frick however, teaches a routing table having IP address (determining a link layer address of a next hop node based on the unified cache) and MAC Address for destinations where each entry may include an address prefix (destination cache) (see table 2 on page 3 and paragraph 33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the destination information including the address prefix as taught by Frick in the unified cache as taught by Sharma. The motivation to do so would be to allow for seamless layer 3 forwarding (see paragraph 7, page 1 in Frick).

In further regards to claim 14, Sharma and Frick fail to teach, using a unified cache in an IPv6 environment. Matsumoto however, teaches the above-mentioned deficiency. Matsumoto teaches that an extracted MAC address from an IPv6 header

can be stored in an ARP cache (see the solution section of the translated abstract on page 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an extracted MAC address in an IPv6 ARP cache as taught by Matsumoto with the teachings of Sharma and Frick. The motivation to do so would be to allow for traffic reduction in an IP network by extracting a layer 2 address in addition to the IP address for routing purposes.

12. In regards to claim 19, Sharma shows in figures 6, 8 and 9, routing methods using a prefix tree where the next hop, local interface, next hop link and next routes are respectively identified (neighbor cache, router cache, prefix cache) by indexing a single table (unified cache).

In further regards to claim 19, Sharma fails to teach the cache including destination information. Frick however, teaches a routing table having IP address (determining a link layer address of a next hop node based on the unified cache) and MAC Address for destinations where each entry may include an address prefix (destination cache) (see table 2 on page 3 and paragraph 33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the destination information including the address prefix as taught by Frick in the unified cache as taught by Sharma. The motivation to do so would be to allow for seamless layer 3 forwarding (see paragraph 7, page 1 in Frick).

In further regards to claim 19, Sharma and Frick fail to teach, using a unified cache in an IPv6 environment. Matsumoto however, teaches the above-mentioned deficiency. Matsumoto teaches that an extracted MAC address from an IPv6 header can be stored in an ARP cache (see the solution section of the translated abstract on page 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an extracted MAC address in an IPv6 ARP cache as taught by Matsumoto with the teachings of Sharma and Frick. The motivation to do so would be to allow for traffic reduction in an IP network by extracting a layer 2 address in addition to the IP address for routing purposes.

Response to Arguments

13. Applicant's arguments filed 6/24/2008 have been fully considered but they are not persuasive.

14. The applicant states that Osafune fails to show a unified cache; in particular that the routing table 401 and ARP cache 402 are separate components. However, Osafune states that the routing table 401 and ARP cache 402 preferably reside on the memory of the server computer 101 (see paragraph 53 on page 4). Since the routing table 401 and ARP cache 402 preferably reside on the same memory, a unified cache is anticipated.

15. Furthermore, the applicant argues that Osafune fails to teach determining whether a destination node is onlink or offlink. The specification on page 2 defines being onlink nodes as being "connected to a link local network to which the neighbor

cache is linked." Furthermore, the paragraph 55 on page 4 of Osafune states that a determination is made as to the next network node to which the packet is to be forwarded the IP address of the next. Thus if the network address of the next hop node is determined, Osafune anticipates the determination of an onlink node (since the next hop node is determined, it has to be linked) as defined in the specification.

16. In response the applicant's statement that Osafune cannot disclose or suggest any method of determining a next hop address using a unified cache in an IPv6 environment, the examiner maintains that independent claim 1, fails to contain any mention of the version of the IP protocol.

17. In response to the applicant's arguments regarding claim 5, claim 5 is now objected.

Allowable Subject Matter

18. Claim 4-5, 7, 11, 13 and 15-17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAY P. PATEL whose telephone number is (571)272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jay P. Patel
Examiner
Art Unit 2419

/Edan Orgad/

Supervisory Patent Examiner, Art Unit 2419